

ABSTRACT

A system for efficient bit plane coding of
 transform coefficient data, such as DCT data used in a
 video coding system. Decimal values for the transform
 coefficients, e.g., in a block of several coefficients,
 are converted to binary values, where each bit occupies
 a corresponding bit plane, from the most significant
 bit to the least significant bit. One bit from each
 coefficient is provided in a common bit plane. A one-
 bit flag or codeword (such as "0") is used for coding -
 one or more initial all-zero bit planes, while another
 one-bit flag (such as "1") is used for designating the
 first subsequent non-all-zero plane. For the first
 non-all-zero plane, a reduced coding table is used to
 provide codewords that follow the one-bit flag. The
 coding table is reduced in size since it does not
 require a special "all-zero" codeword. Additionally,
 the use of a one-bit flag for designating the initial
 all-zero bit planes reduces the required number of
 coding bits over prior art schemes that require multi-
 bit all-zero codewords. An encoder (200) includes a
 "0" codeword function (242), a "1" codeword function
 (244), a reduced table (246), and conventional tables
 (248). A corresponding decoder (400) includes a "0"
 codeword function (442), a "1" codeword function (444),
 a reduced table (446), and conventional tables (448).